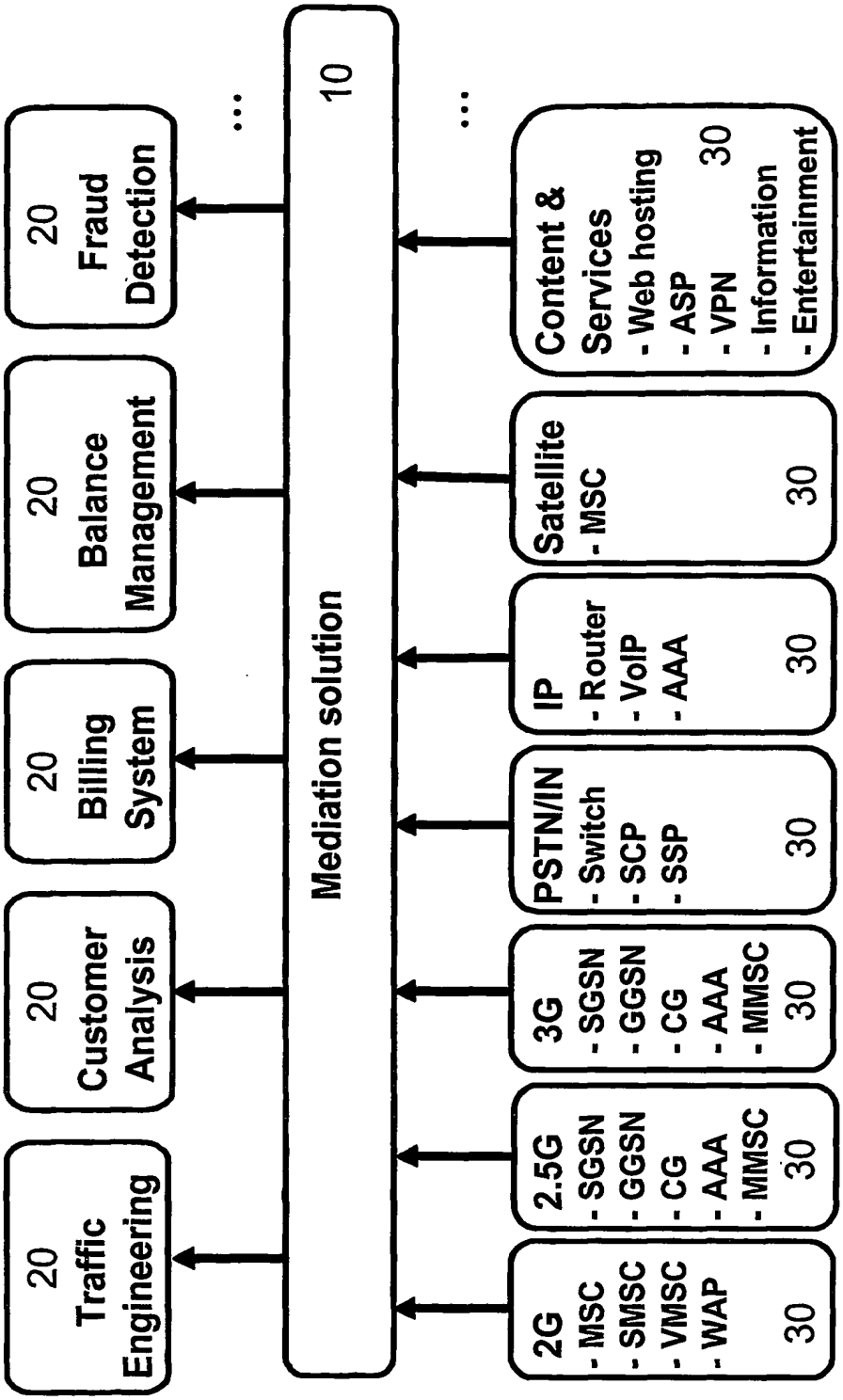

20 Traffic Engineering
20 Customer Analysis
20 Billing System
20 Balance Management
20 Fraud Detection
...
Mediation solution
10
...
2G
- MSC
- SMSC
- VMSC
- WAP
30
2.5G
- SGSN
- GGSN
- CG
- AAA
- MMSC
30
3G
- SGSN
- GGSN
- CG
- AAA
- MMSC
30
PSTN/IN
- Switch
- SCP
- SSP
30
IP
- Router
- VoIP
- AAA
30
Satellite
- MSC
30
Content & Services
- Web hosting
- ASP
- VPN
- Information
- Entertainment
30

Fig. 1

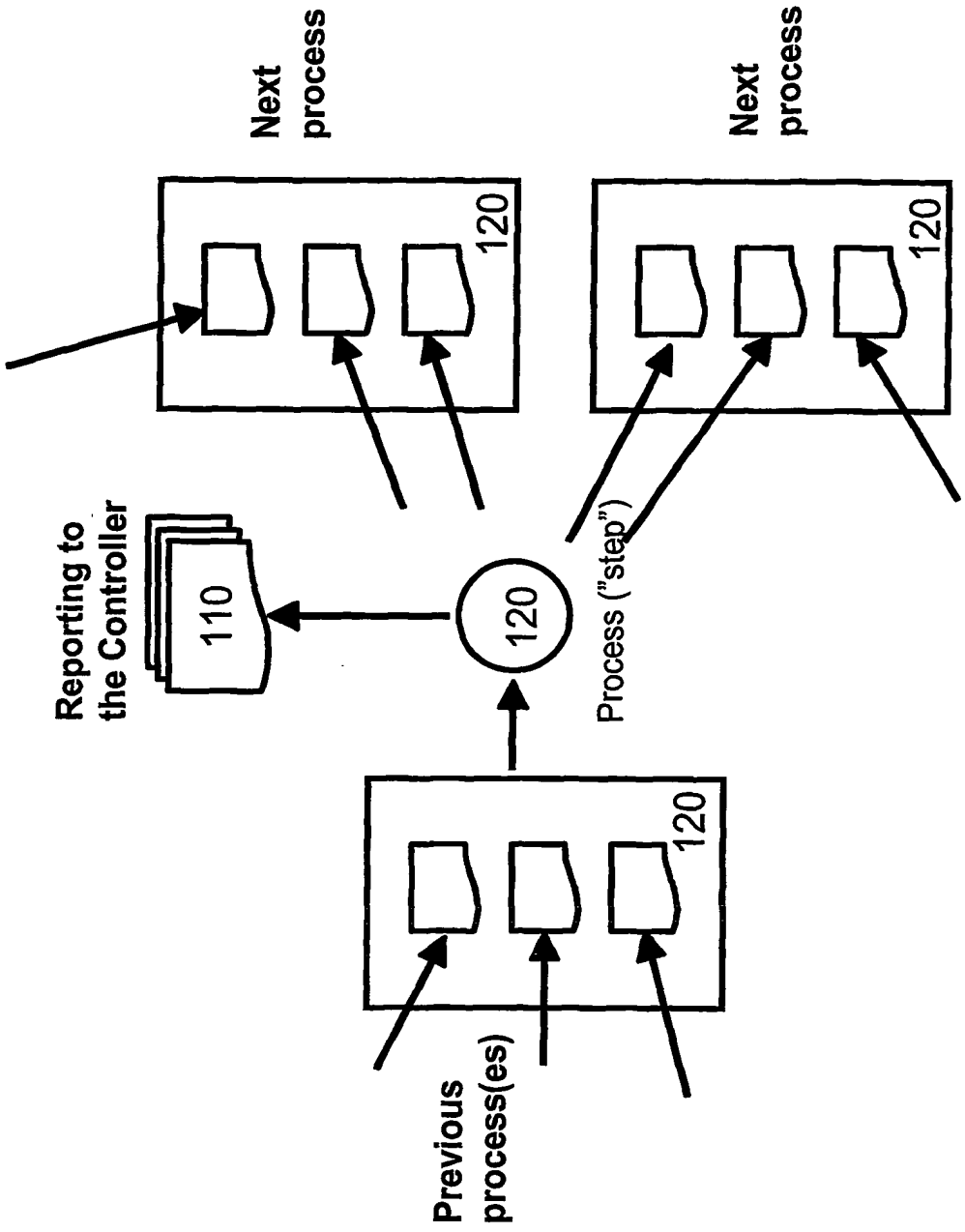

Next process
Next process
120
120
120
120
Reporting to the Controller
110
Process ("step")
Previous process(es)

Fig. 2

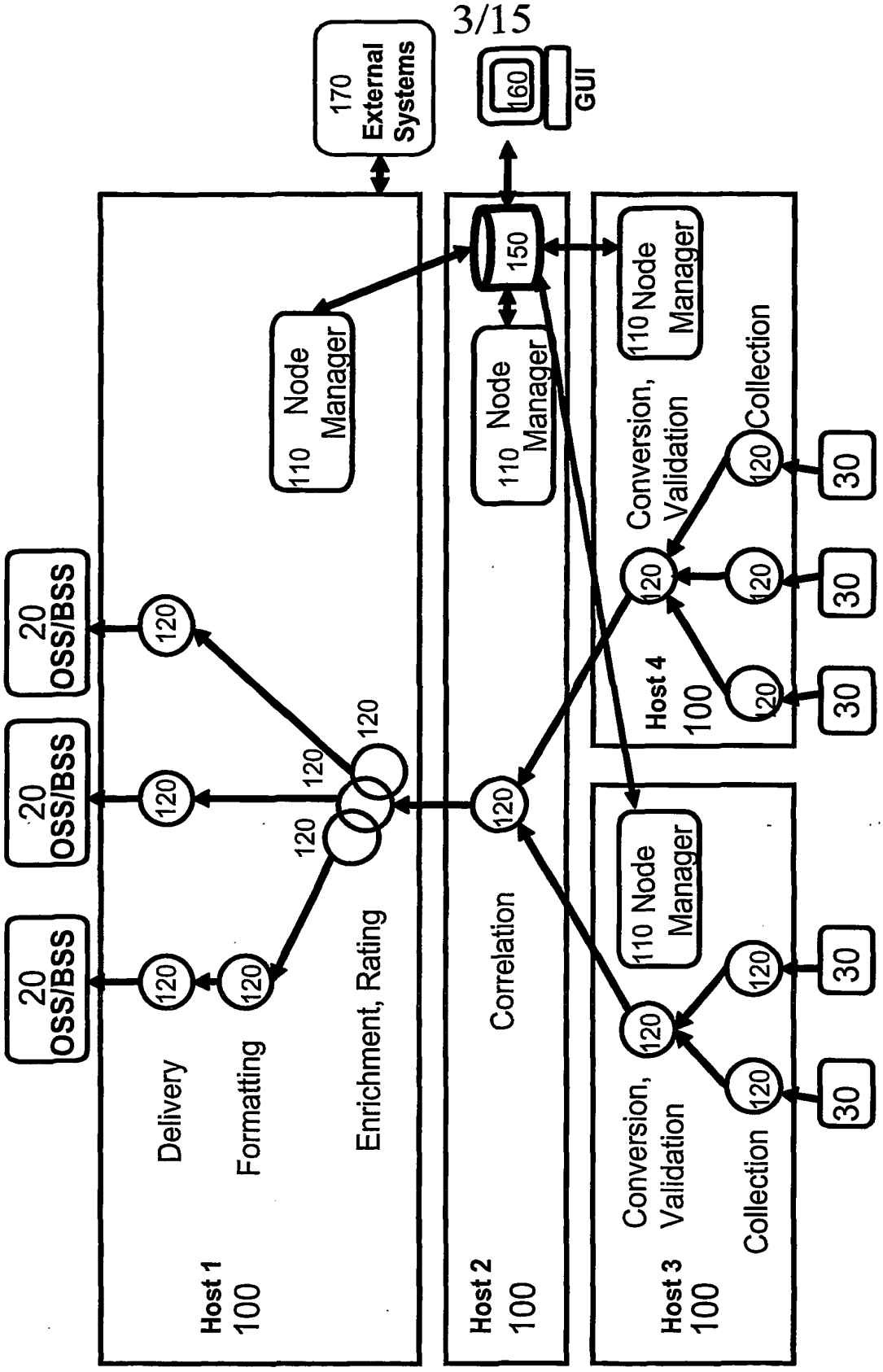

170 External Systems
160 GUI
150
110 Node Manager
110 Node Manager
110 Node Manager
110 Node Manager
Host 1 100
Host 2 100
Host 3 100
Host 4 100
Delivery
Formatting
Enrichment, Rating
Correlation
Conversion, Validation
Collection
Conversion, Validation
Collection
20 OSS/BSS
20 OSS/BSS
20 OSS/BSS
120
30

Fig. 3

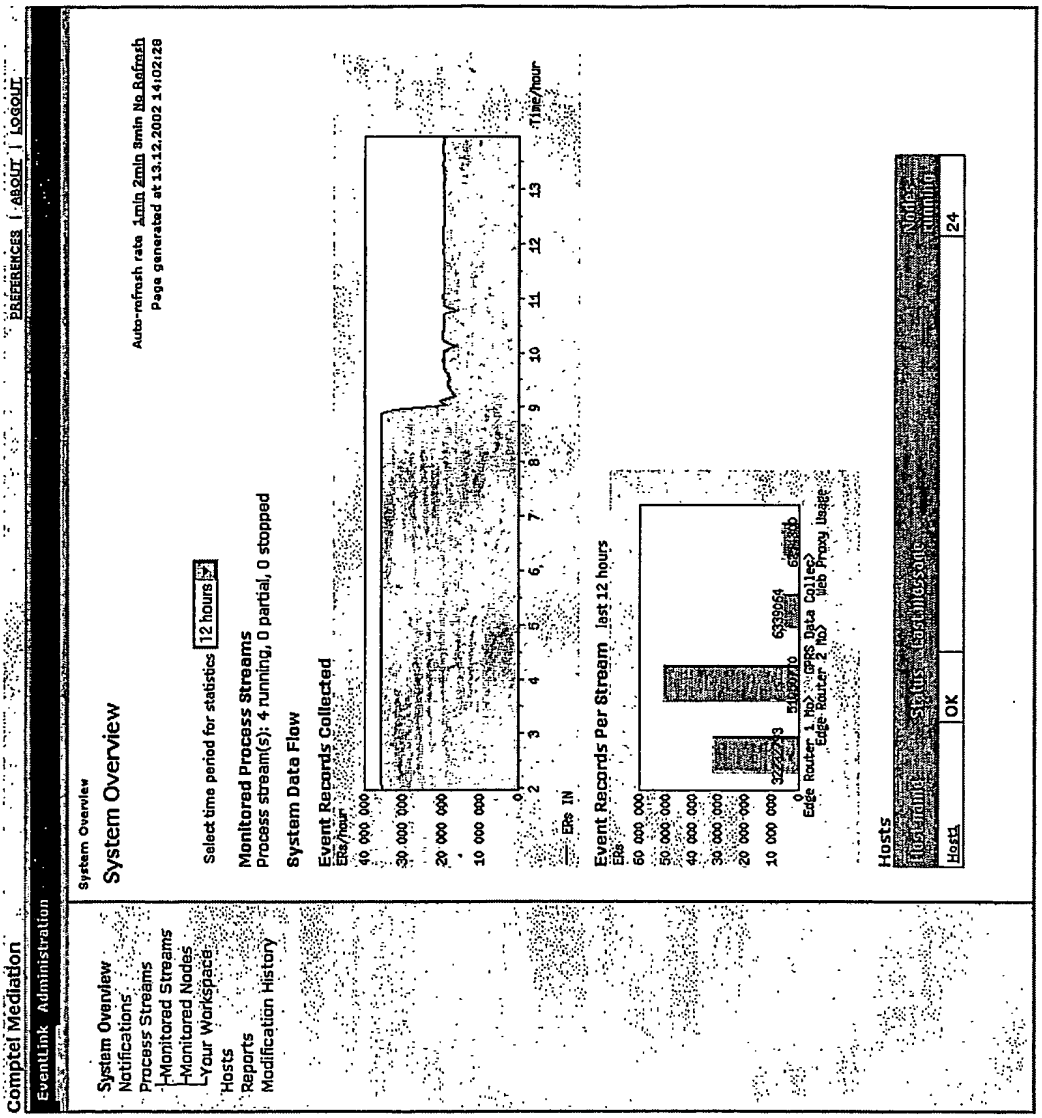

Comptel Mediation
EventLink Administration
PREFERENCES | ABOUT | LOGOUT
System Overview
Notifications
Process Streams
Monitored Streams
Monitored Nodes
Your Workspace
Hosts
Reports
Modification History
System Overview
System Overview
Auto-refresh rate 1min 2min 5min No Refresh
Page generated at 13.12.2002 14:02:28
Select time period for statistics 12 hours
Monitored Process Streams
Process stream(s): 4 running, 0 partial, 0 stopped
System Data Flow
Event Records Collected
Ers/hour
40 000 000
30 000 000
20 000 000
10 000 000
0
2 3 4 6 7 8 9 10 11 12 13
Time/hour
Ers IN
Event Records Per Stream last 12 hours
Ers
60 000 000
50 000 000
40 000 000
30 000 000
20 000 000
10 000 000
0
Edge Router 1 MO
GPRS Data Collect
Edge Router 2 MO
Web Proxy Usage
Hosts
Hostname
Status
Local Messages
Node running
Host1
OK
24

Fig. 4

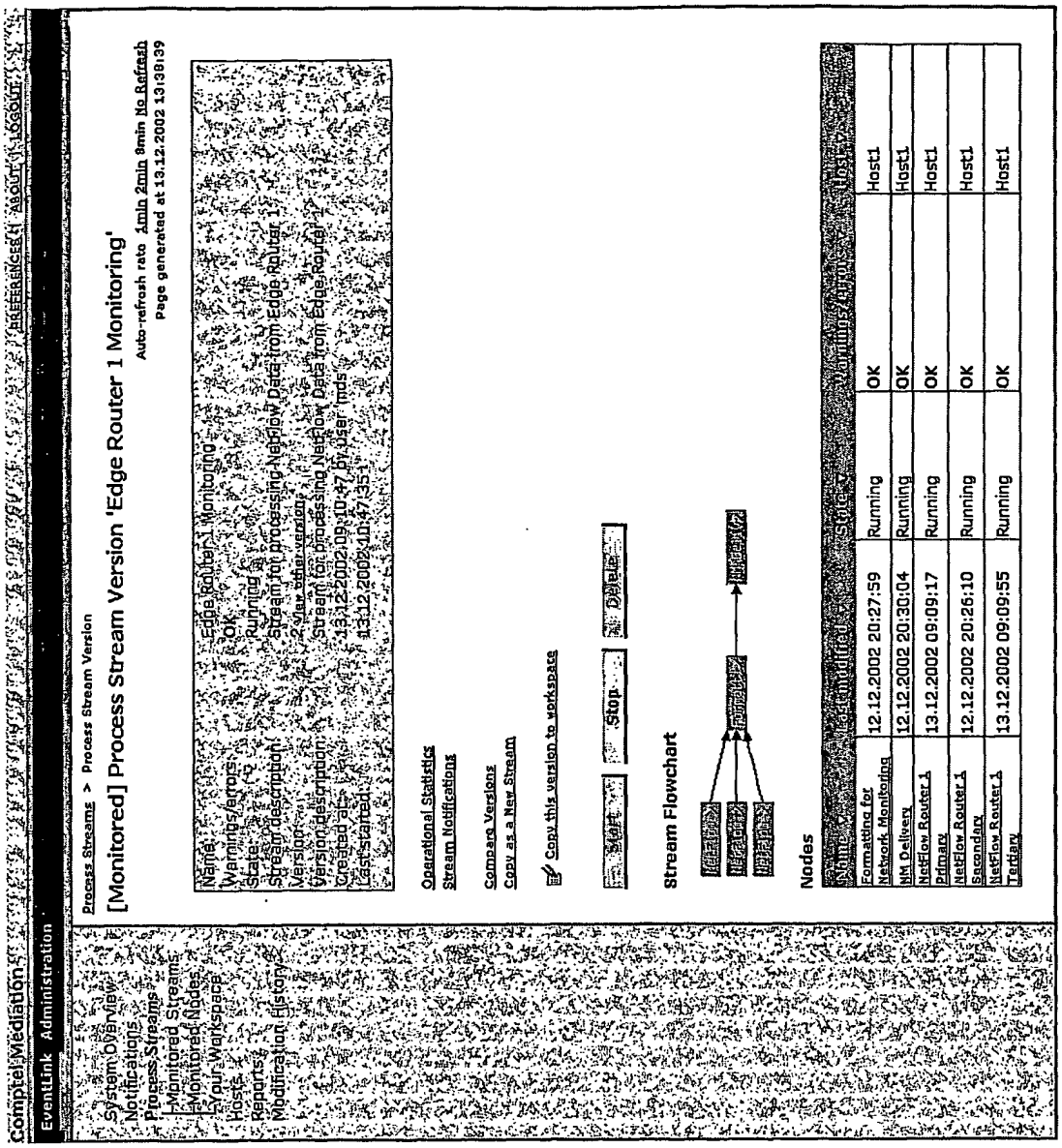

Comptel Mediation
EventLink Administration
System Overview
Notifications
Process Streams
Monitored Streams
Monitored Nodes
Your Workspace
Hosts
Reports
Modification History
Process Streams > Process Stream Version
[Monitored] Process Stream Version 'Edge Router 1 Monitoring'
Auto-refresh rate 1min 2min 8min No Refresh
Page generated at 13.12.2002 13:38:39
Name: Edge Router 1 Monitoring
Warnings/errors: Ok
State: Running
Stream description: Stream for processing NetFlow Data from Edge Router 1
Version: 2 (Jan other version)
Version description: Stream for processing NetFlow Data from Edge Router 2
Created at: 13.12.2002 09:10:47 by user mds
Last started: 13.12.2002 10:47:35
Operational Statistics
Stream Notifications
Compare Versions
Copy as a New Stream
Copy this version to workspace
Start
Stop
Delete
Stream Flowchart
Nodes
Name
Last modified
State
Warnings/Errors
Host
Formatting for Network Monitoring
12.12.2002 20:27:59
Running
OK
Host1
NM Delivery
12.12.2002 20:30:04
Running
OK
Host1
NetFlow Router 1 Primary
13.12.2002 09:09:17
Running
OK
Host1
NetFlow Router 1 Secondary
12.12.2002 20:26:10
Running
OK
Host1
NetFlow Router 1 Tertiary
13.12.2002 09:09:55
Running
OK
Host1

Fig. 5

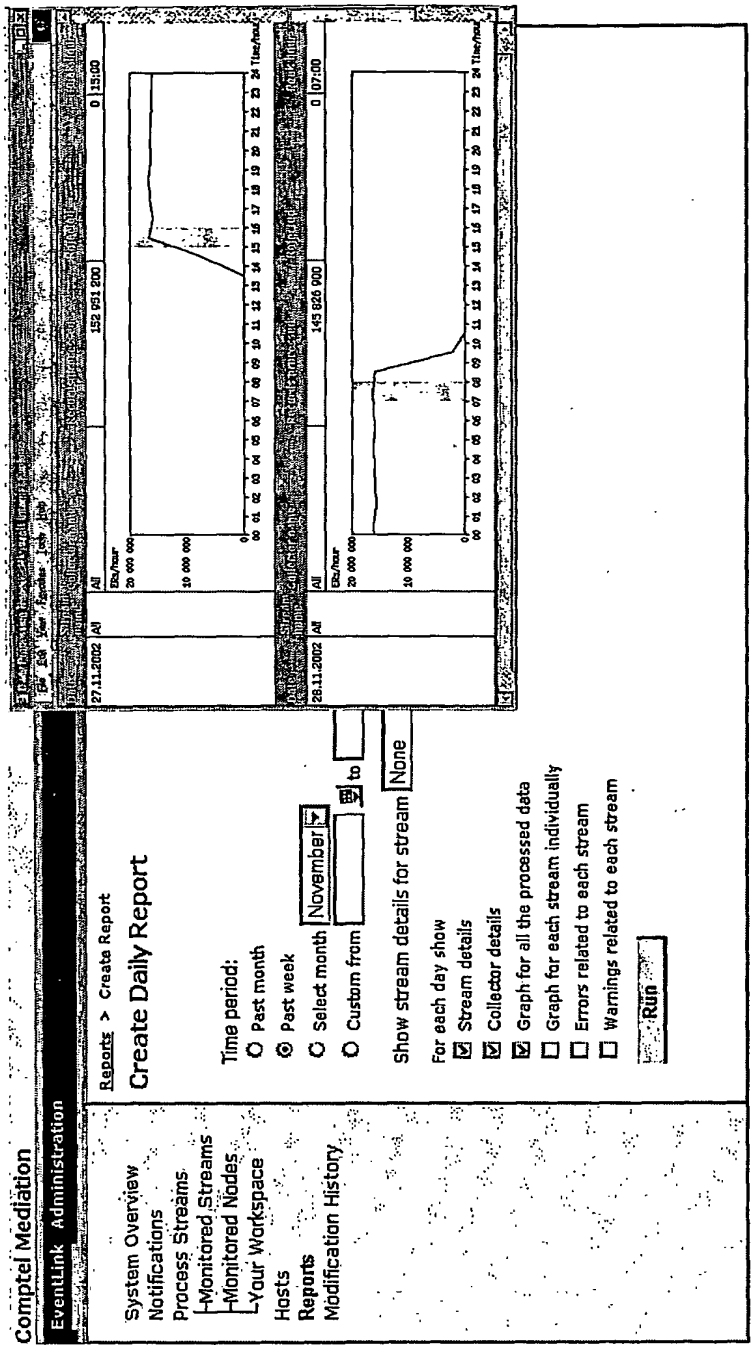

Comptel Mediation
EventLink Administration
System Overview
Notifications
Process Streams
Monitored Streams
Monitored Nodes
Your Workspace
Hosts
Reports
Modification History
Reports > Create Report
Create Daily Report
Time period:
Past month
Past week
Select month
November
Custom from
to
Show stream details for stream
None
For each day show
Stream details
Collector details
Graph for all the processed data
Graph for each stream individually
Errors related to each stream
Warnings related to each stream
Run

Fig. 6

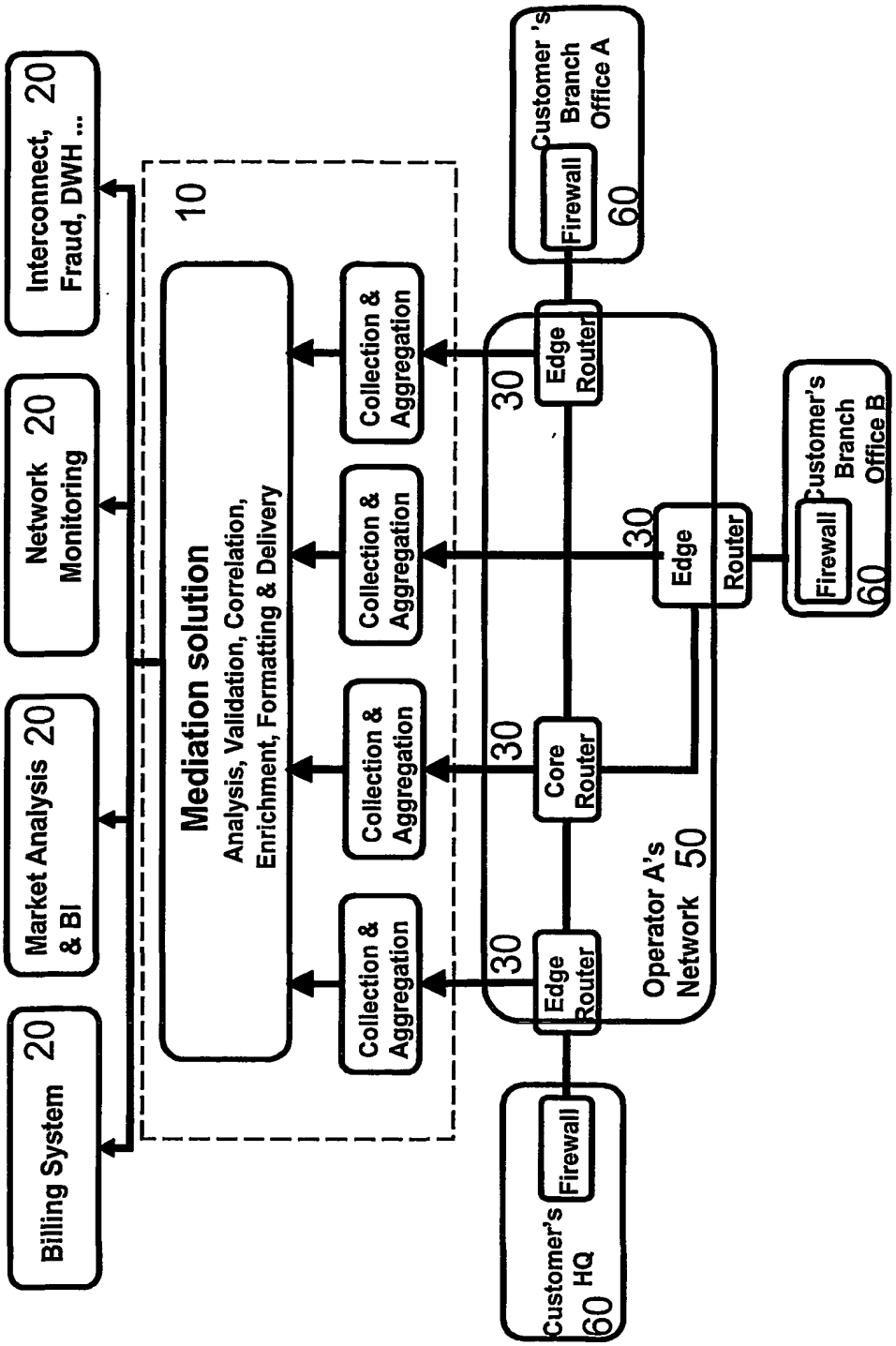

Billing System 20
Market Analysis & BI 20
Network Monitoring 20
Interconnect, Fraud, DWH ... 20
10
Mediation solution
Analysis, Validation, Correlation, Enrichment, Formatting & Delivery
Collection & Aggregation
Collection & Aggregation
Collection & Aggregation
Collection & Aggregation
30
30
30
30
Edge Router
Core Router
Edge Router
Edge Router
Operator A's Network 50
Customer's HQ 60
Firewall
Customer 's Branch Office A 60
Firewall
Customer's Branch Office B 60
Firewall

Fig. 7

Fig. 8

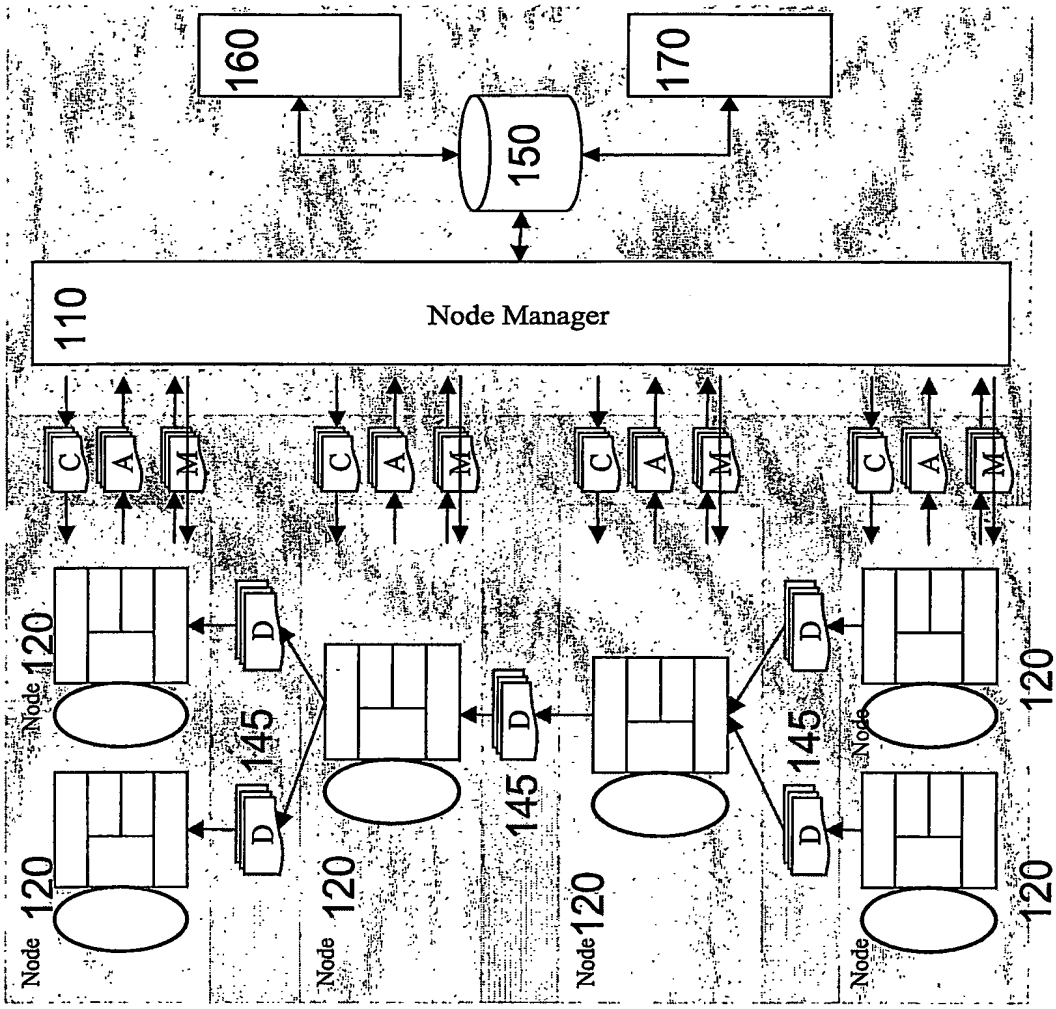


Fig. 9

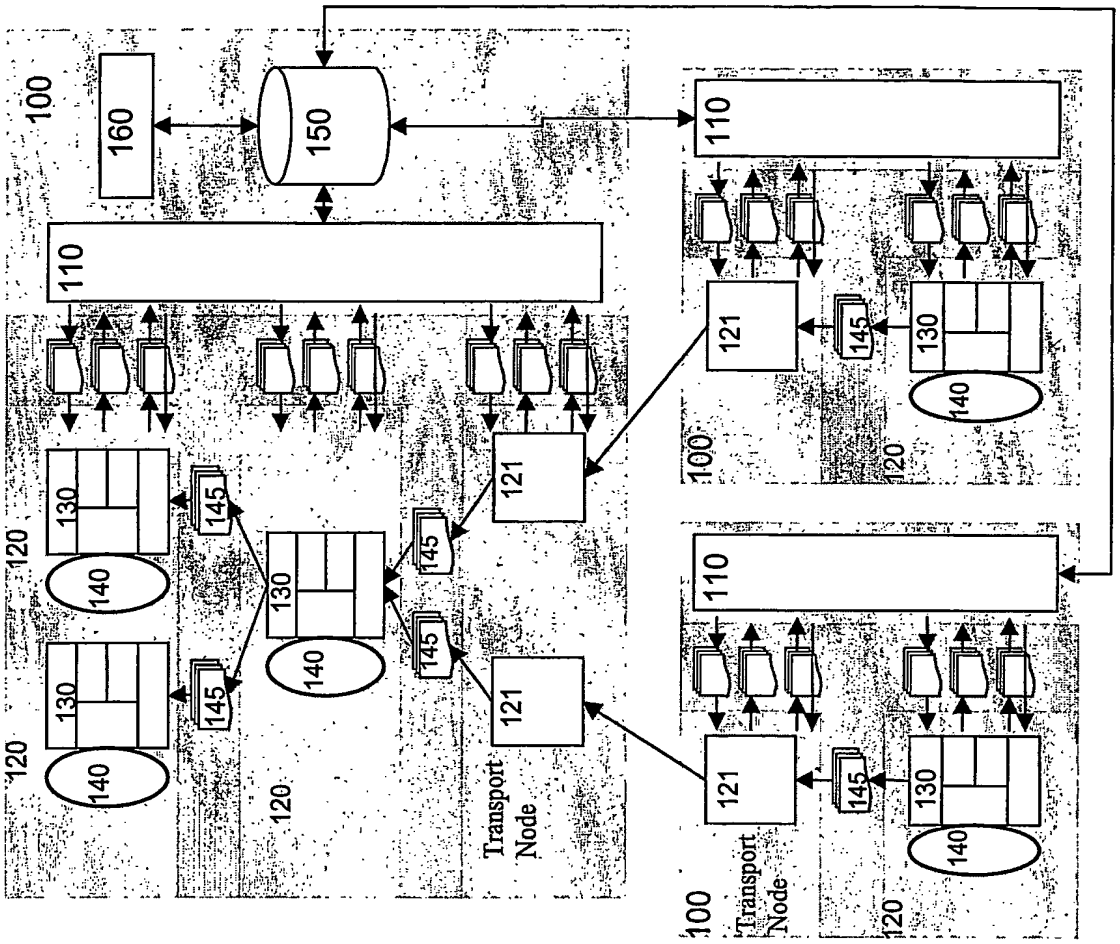

100
160
150
110
120
130
140
145
121
Transport Node
100
110
121
130
140
145
120
100
Transport Node
120

Fig. 10

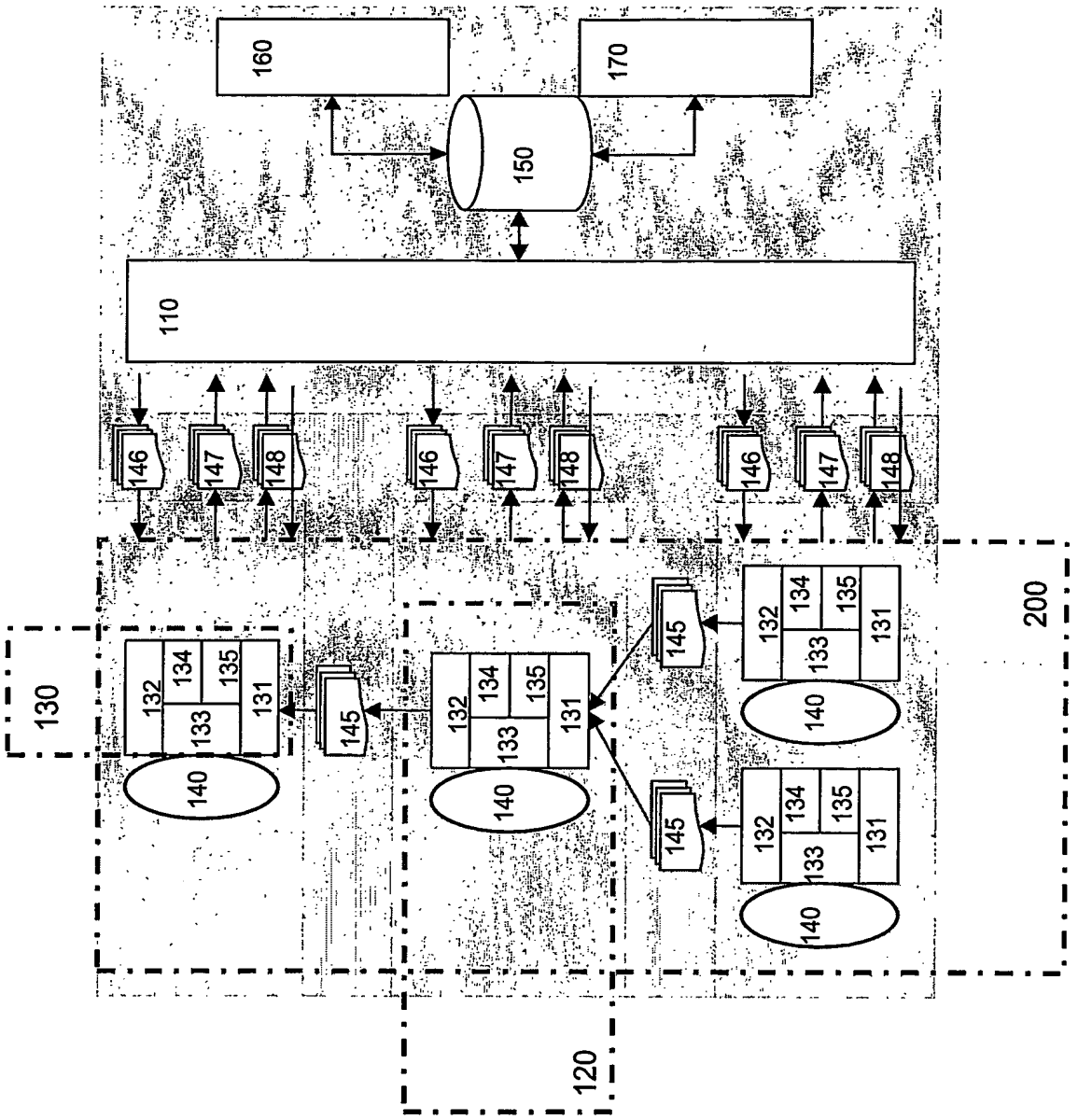

160
170
150
110
146
147
148
145
132
134
135
131
133
140
130
200
120

Fig. 11

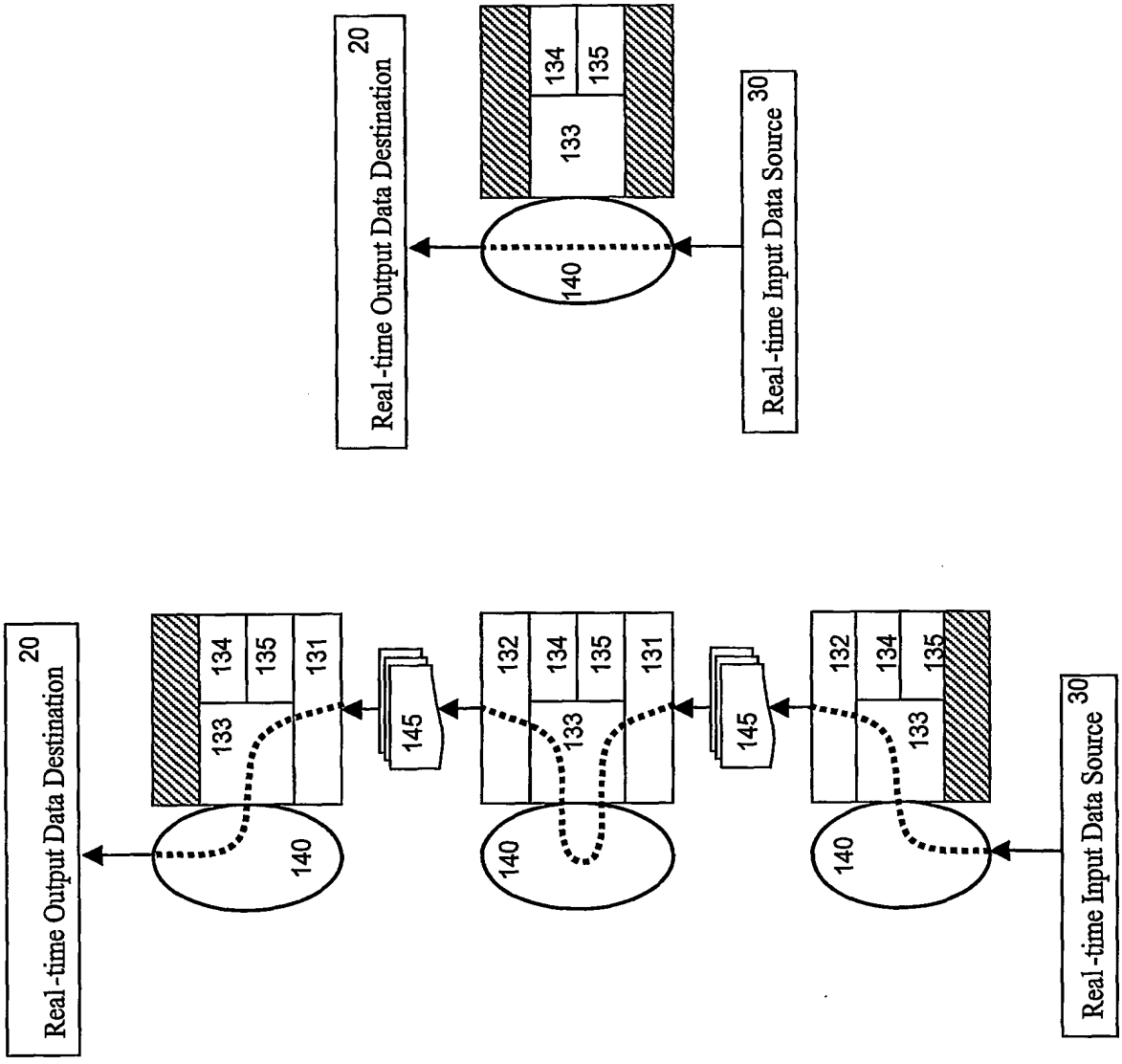

Real-time Output Data Destination
20
Real-time Input Data Source
30
131
132
133
134
135
140
145

Fig. 12

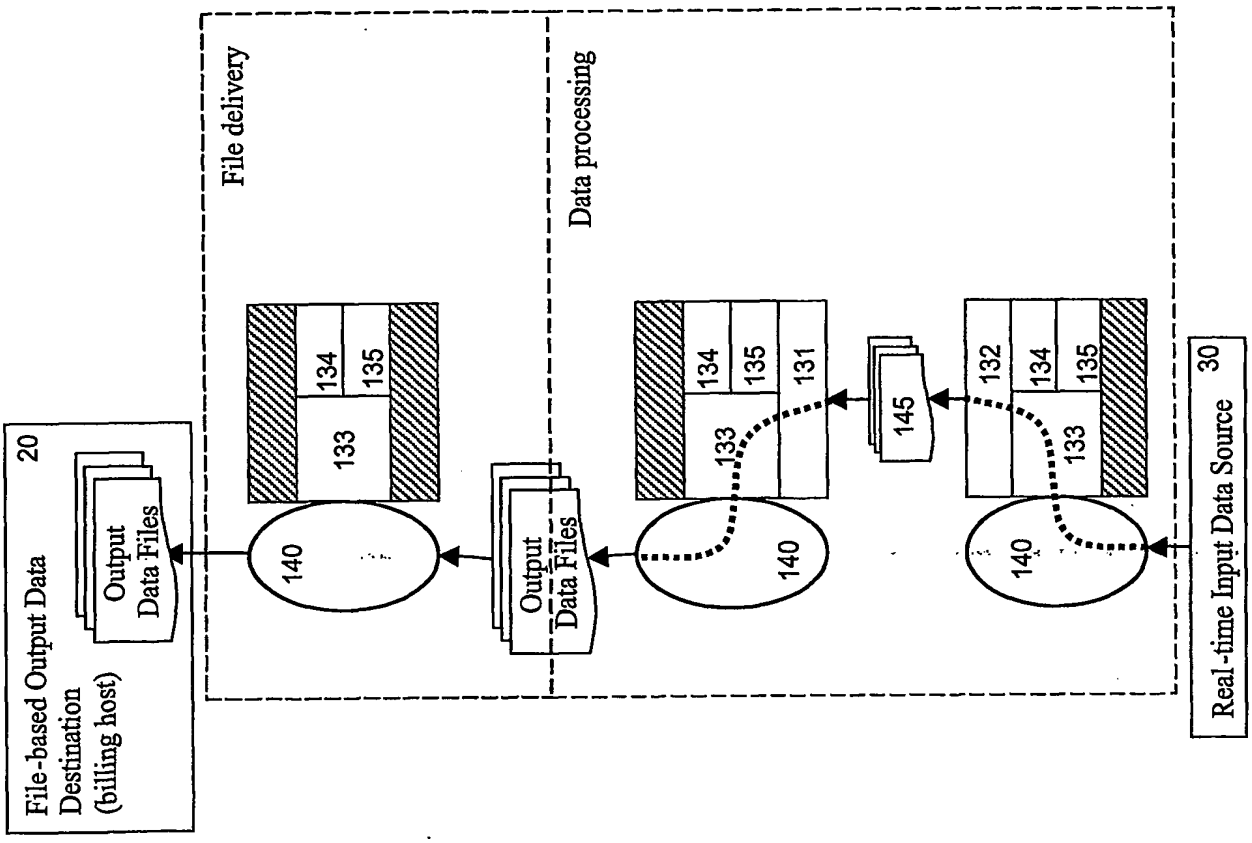
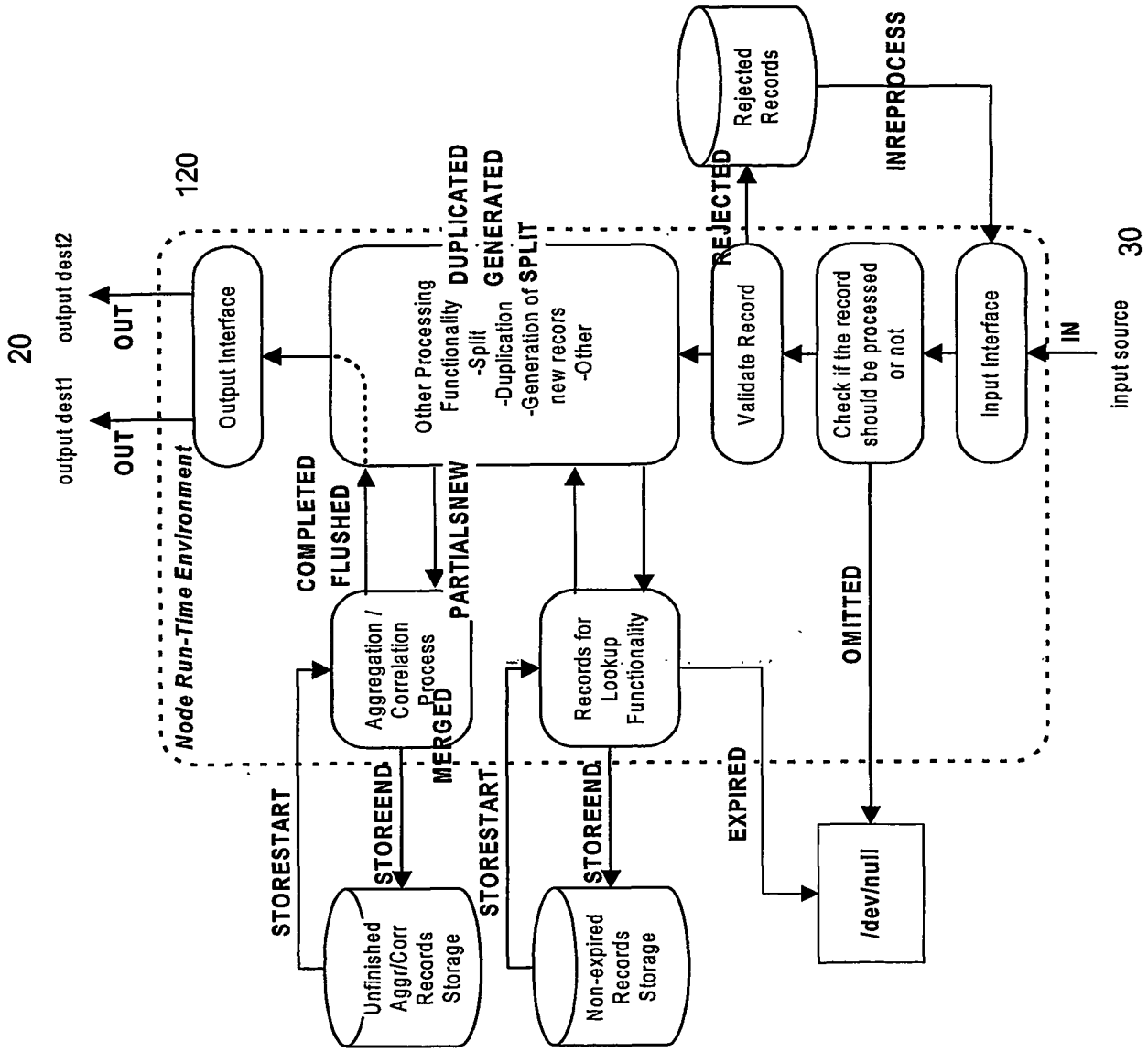

File-based Output Data Destination (billing host)
20
Output Data Files
File delivery
Data processing
140
133
134
135
Output Data Files
140
133
134
135
131
145
140
132
133
134
135
Real-time Input Data Source
30

Fig. 13


20
120
30
output dest1
output dest2
OUT
OUT
Output Interface
Node Run-Time Environment
Other Processing Functionality
-Split
-Duplication
-Generation of new recors
-Other
DUPLICATED
GENERATED
SPLIT
REJECTED
Rejected Records
INREPROCESS
Validate Record
Check if the record should be processed or not
Input Interface
IN
input source
COMPLETED
FLUSHED
PARTIALSNEW
Aggregation / Correlation Process
MERGED
Records for Lookup Functionality
OMITTED
STORESTART
STOREEND
STORESTART
STOREEND
EXPIRED
Unfinished Aggr/Corr Records Storage
Non-expired Records Storage
/dev/null

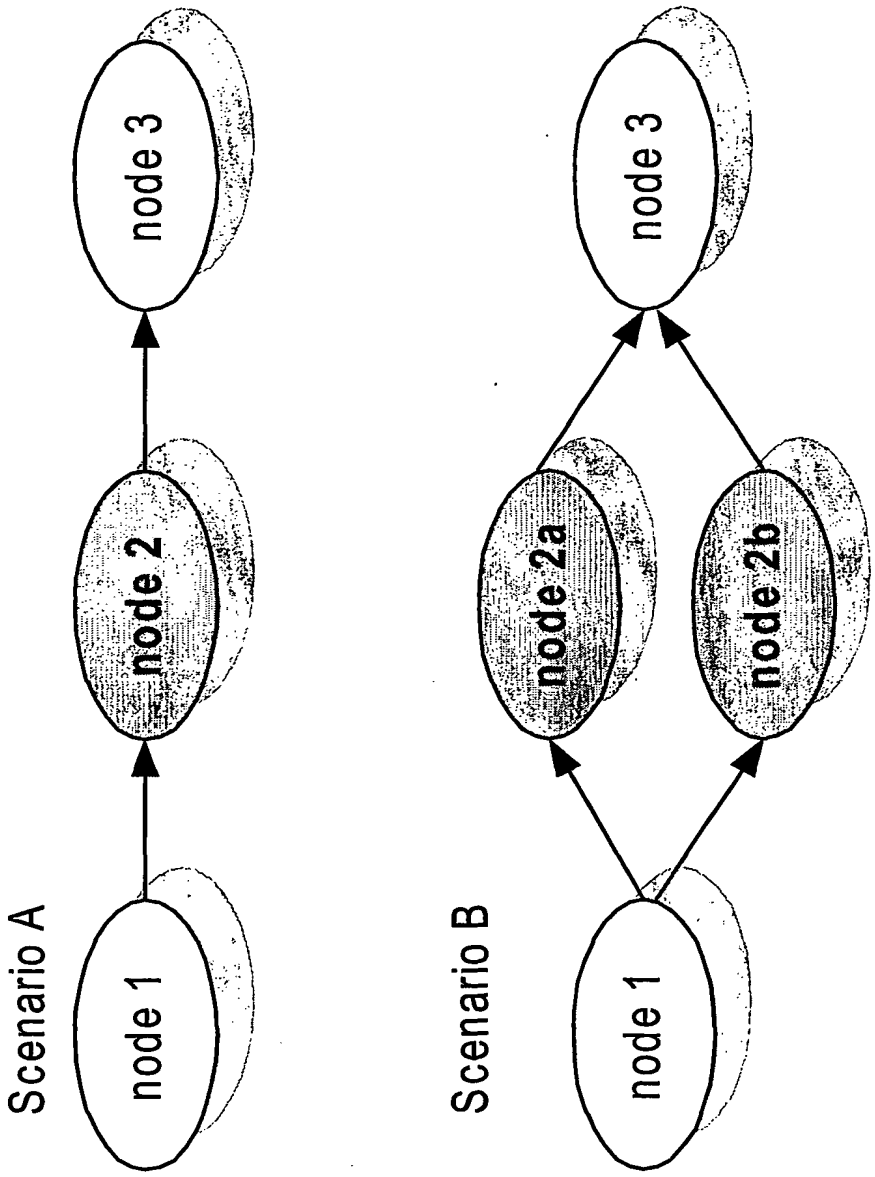

Scenario A
node 1
node 2
node 3
Scenario B
node 1
node 2a
node 2b
node 3

Fig. 14

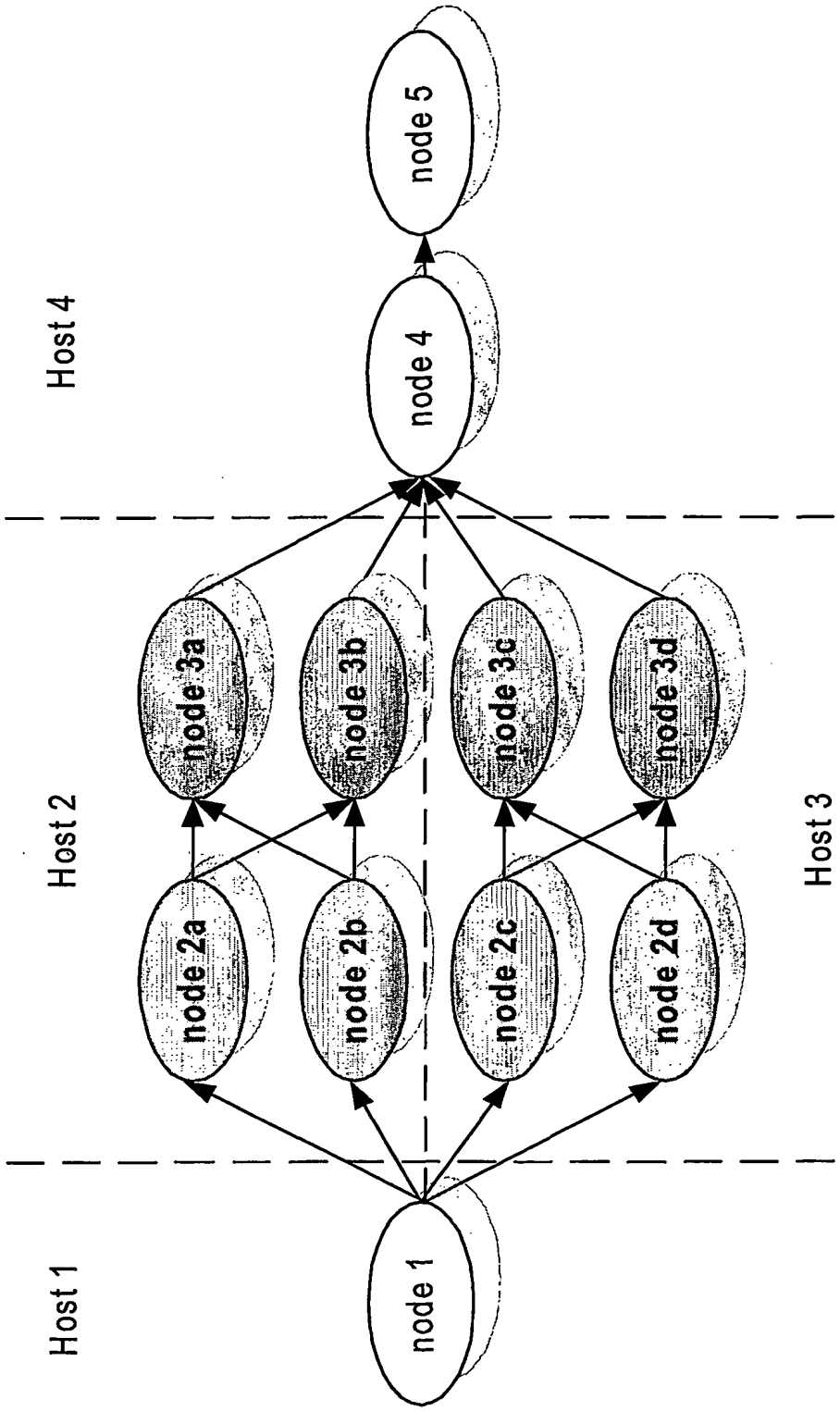

Host 4
Host 2
Host 3
Host 1
node 5
node 4
node 3a
node 3b
node 3c
node 3d
node 2a
node 2b
node 2c
node 2d
node 1

Fig. 15